

# Construction Stormwater Basics

NPDES Stormwater Program



# Topics

- ▶ Effects of stormwater runoff
- ▶ Stormwater regulatory framework
- ▶ Municipal Program
- ▶ Construction Program
- ▶ Industrial Program

# Effects of Stormwater Runoff

- ▶ Water quality impacts
  - Pollutant sources
  - Pollutant impairments
- ▶ Water quantity impacts
  - Increased runoff/reduced infiltration
  - Changes to stream geomorphology
  - Impacts to aquatic habitat



# Why is stormwater a problem?

Urban Runoff is the Source of Problems in:

- ▶ 34,871 miles or 13% of all Impaired Rivers and Streams
- ▶ 1,369,327 acres or 18% of all Impaired Lakes
- ▶ 5045 square miles or 32% of all Impaired Estuaries

\* The National Water Quality Inventory 2000. Note this report describes the quality of assessed waters. Many of the nation's rivers, lakes and estuaries remain unassessed. The percentages above are based on assessed waters only.



# Impacts: Pollutants

Trash



Heavy Metals



Nutrients



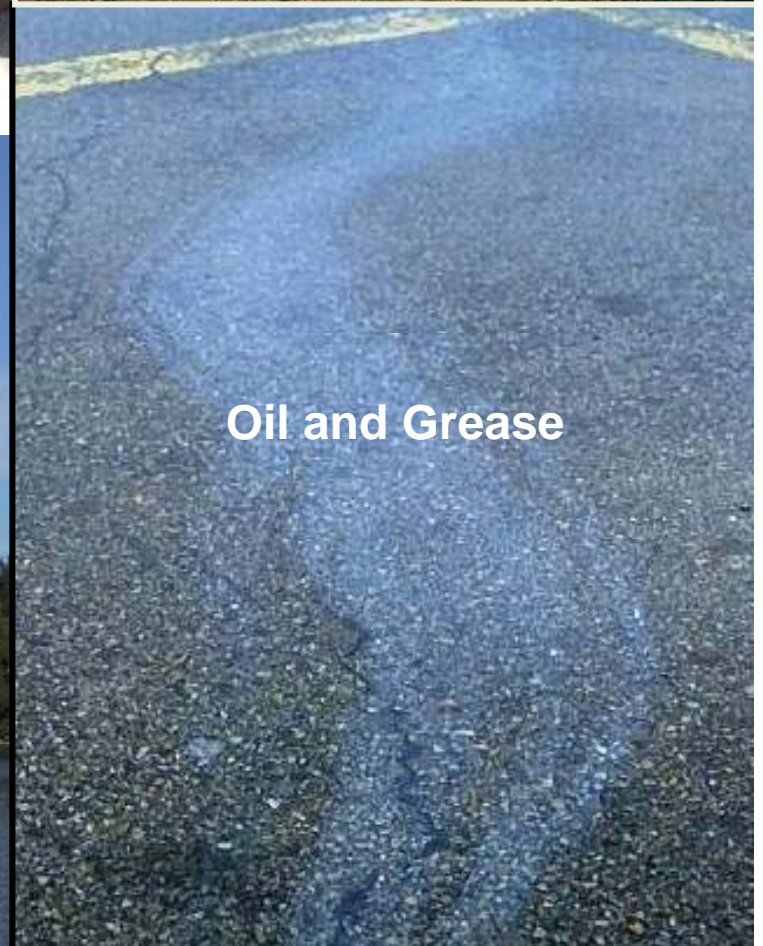
Sediment



Pathogens



Oil and Grease





# Changes to Stream Geomorphology



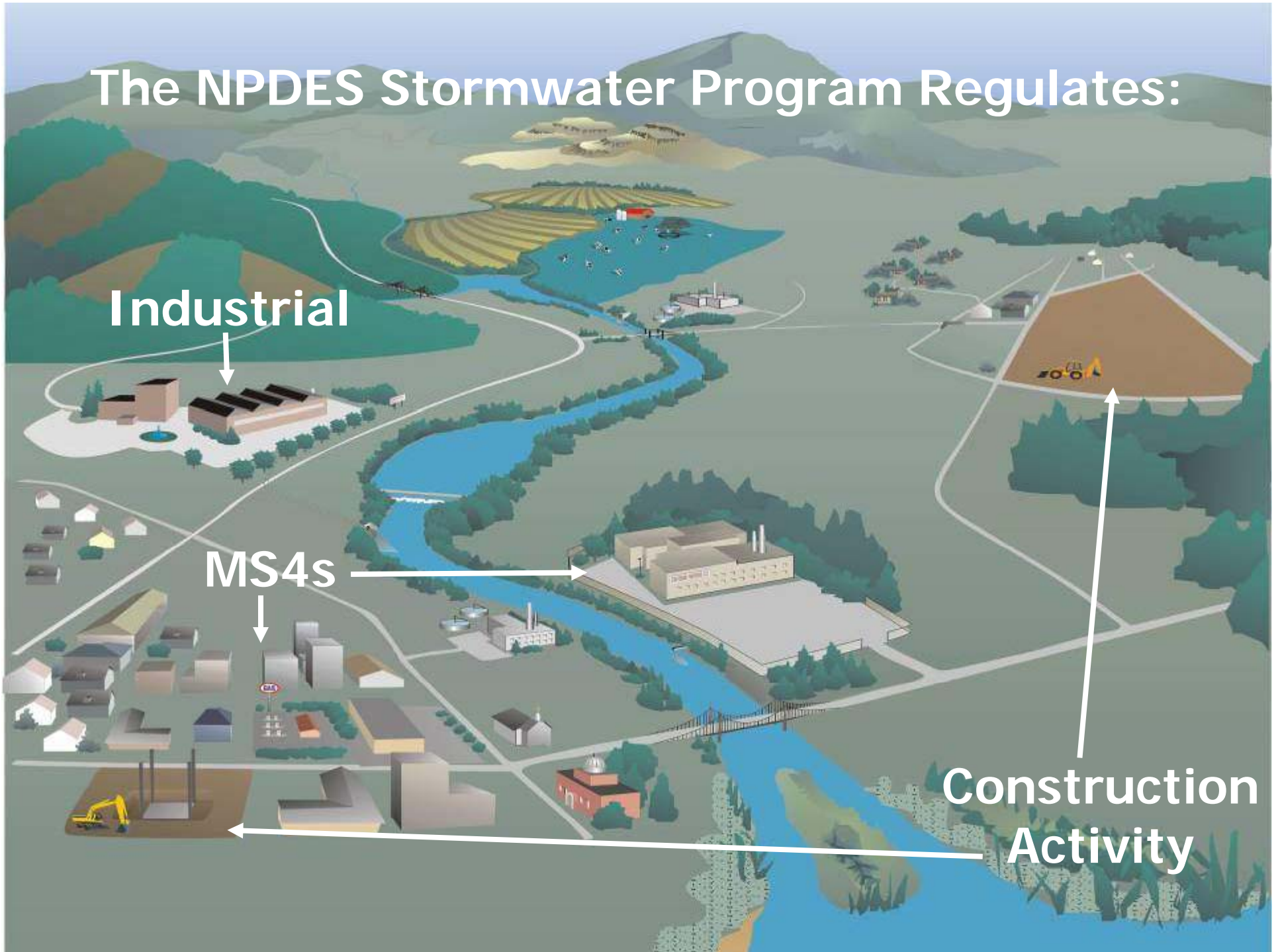
- ▶ Increased stormwater volume and velocity
- ▶ Results in stream widening and down-cutting
- ▶ More flooding

# The NPDES Stormwater Program Regulates:

Industrial

MS4s

Construction Activity





# Regulatory History

- ▶ Before 1987 stormwater was not regulated
- ▶ Water Quality Act of 1987 required NPDES permitting of certain stormwater discharges
- ▶ Tribal stormwater regulation effective March 10, 2003
- ▶ Phase I regulations November 16, 1990
- ▶ Phase II regulations December 8, 1999



# The “Phases”

## ► Phase I – 1990

- Medium and large municipalities (over 100,000)
- Industrial activity (11 categories, including construction over 5 acres)
- Category 11 (light industry – only if exposure)

## ► Phase II – 1999

- Smaller municipalities in “urbanized areas”
- Construction sites (1-5 acres)
- “No exposure” revised and expanded, including notice

# What is an MS4?

- ▶ A municipal separate storm sewer system (MS4) is:
- ▶ A conveyance or system of conveyances... owned by a state, city, town, or other public entity that discharges to waters of the U.S. and is:
  - designed or used for collecting or conveying stormwater
  - not a combined sewer
  - not part of a Publicly Owned Treatment Works (POTW)



This is an MS4!



# Industrial Stormwater Program





# Industrial Activity



# Industrial Stormwater

- ▶ Pollutants vary by industrial activity, but include:
  - Metals
  - Organic chemicals
  - Suspended solids
  - Oil and grease
  - And many others



# Regulated Industrial Categories

- ▶ Facilities Subject to Standards (i)
- ▶ Heavy Manufacturing (ii)
- ▶ Mining/Oil and Gas (iii)
- ▶ Hazardous Waste Facilities (iv)
- ▶ Landfills (v)
- ▶ Recycling Facilities (vi)
- ▶ Steam Electric Power Plants (vii)
- ▶ Transportation Industries (viii)
- ▶ Sewage Treatment Plants (ix)
- ▶ Large Construction (x)
- ▶ Light industry (xi)

# Industrial Stormwater Controls

Like the rest of the stormwater program:

- ▶ Stormwater Pollution Prevention Plans (SWPPPs) are the key to the industrial stormwater program
- ▶ Generally, industrial stormwater control relies on Best Management Practices rather than end-of-pipe controls



# Construction Activities





**Construction  
Activity**



# Construction Overview

- ▶ The number of construction sites covered varies widely each year
  - In 1999, EPA estimated that approximately 400,000 construction sites would be covered by the Phase I and II program
- ▶ The primary pollutant is sediment
  - Other pollutants include, trash and debris, chemicals (in paints, concrete washout, etc), oil and grease, etc.

# Stormwater Construction Program is Designed to:

- ▶ Prevent or minimize impact of construction
- ▶ Minimize erosion during construction
- ▶ Control sedimentation
- ▶ Control other wastes at the site





# Regulated Construction Activities

- ▶ Large construction (>5 acres)
- ▶ Small construction (1-5 acres) in stand alone section
- ▶ “Definition” of construction
  - Clearing, grading or excavating

# Common Plan

- ▶ Includes activities that maybe on smaller parcels of land but are part of a larger, common plan of development or sale
  - A common plan includes drawings, plans, advertising materials, subdivision plans, etc.
  - A common plan may describe activities that will occur on different schedules





# What is a SWPPP?

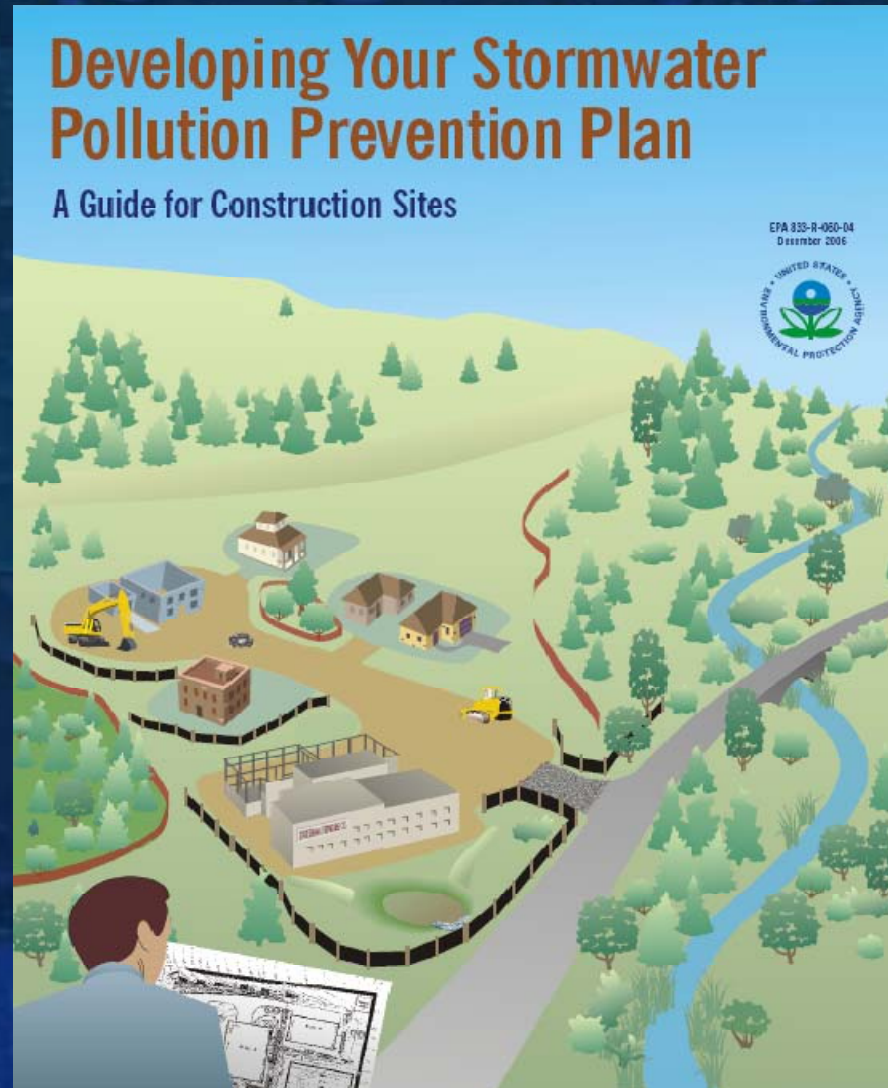
*A Stormwater Pollution Prevention Plan is a detailed plan that:*

- ▶ Identifies potential sources of sediment and stormwater pollution at the construction site
- ▶ Describes practices to reduce pollutant runoff from the site
- ▶ Identifies procedures the operator will implement to comply with the terms and conditions of the NPDES permit



***This is not a SWPPP!***

# EPA SWPPP Guide



[www.epa.gov/npdes/swppppguide](http://www.epa.gov/npdes/swppppguide)